

The opinion in support of the decision being entered today was
not written for publication and is **not** precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

MAILED

SEP 10 2004

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEVEN A. VAN SLYKE and ROBERT G. SPAHN

Appeal No. 2004-1962
Application No. 09/996,415

ON BRIEF

Before DELMENDO, JEFFREY T. SMITH and PAWLIKOWSKI, Administrative Patent Judges.

PAWLIKOWSKI, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-18.

Claim 1 is representative of the subject matter on appeal and is set forth below, wherein the text in bold is for emphasis only:

1. A thermal physical vapor deposition source for vaporizing solid organic materials and applying a vaporized organic material as a layer onto a surface of a structure in a chamber at

reduced pressure in forming an organic light-emitting device (OLED), comprising:

- a) a bias heater defined by side walls and a bottom wall, the side walls having a height dimension H_B ;
- b) an electrically insulative container disposed in the bias heater for receiving vaporizable solid organic material, the container being defined by side walls and a bottom wall, and the container side walls having a height dimension H_C which is greater than the height dimension H_B of the bias heater side walls;
- c) a vaporization heater disposed on upper side wall surfaces of the container, the vaporization heater defining a vapor efflux slit aperture extending into the container for permitting vaporized organic material to pass through the slit aperture and onto the surface of the structure, wherein the container side walls are taller than the bias heater side walls to electrically isolate the vaporization heater from the bias heater,
- d) a bias heater supply for applying an electrical potential to the bias heater to cause bias heat to be applied to the solid organic material in the container, the bias heater providing a controlled bias temperature which is insufficient to cause the solid organic material to vaporize;
- e) a vaporization heater power supply for applying an electrical potential to the vaporization heater to controllably heat uppermost portions of the solid organic material in the container to vaporize the solid organic material and allow vaporized organic material to project onto the structure through the efflux slit aperture to provide an organic layer on the structure, wherein the vaporization heater power supply is separate from the bias heater power supply; and
- f) means for providing relative motion between the vapor deposition source and the structure to provide a substantially uniform organic layer on the structure.

Claims 1, 3-6, 15, and 17 stand rejected under 35 U.S.C. § 103 as being obvious over Spahn in view of Green, Yamazaki, and Soden.

Claims 2, 8-14, 16, and 18 stand rejected under 35 U.S.C. § 103 as being obvious over Spahn in view of Green, Yamazaki and Soden, and further in view of Tanabe and Takagi.

Claims 7 and 12-14 stand rejected under 35 U.S.C. § 103 as being obvious over Spahn in view Green and Yamazaki, and further in view of Tanabe and Takagi, and further in view of Steube.

The examiner relies upon the following references as evidence of unpatentability:

Takagi et al. (Takagi)	4,197,814	Apr. 15, 1980
Steube	4,233,937	Nov. 18, 1980
Soden et al. (Soden)	5,532,102	Jul. 02, 1996
Spahn	6,237,529	May 29, 2001
Yamazaki et al. (Yamazaki)	2001/0006827	Jul. 05, 2001
Tanabe et al. (Tanabe)	2001/0008121	Jul. 19, 2001

On page 4 of the brief, appellants state that claims 2-18 stand or fall with claim 1. We therefore consider claim 1 in this appeal. 37 CFR § 1.192(c) (7-8) (2004).

We have carefully reviewed appellants' brief and reply brief, and the examiner's answer, and the applied references. This review has led us to conclude that the examiner's rejections are well founded.

OPINION

In an effort to streamline the issues in this appeal, we observe, on pages 4-8 of the brief and on pages 2-4 of the reply brief, that appellants limit their arguments to the references of Spahn in view of Soden in connection with the subject matter

of claim 1. Accordingly, we need only address these references. Also, because appellants present these arguments as being applicable to all of the rejections, our determinations made with regard to the patentability of claim 1 with regard to the combination of Spahn in view of Soden are applicable to all of the rejections.

We refer to pages 3-5 of the answer and pages 6-11 of the answer with regard to the examiner's position on this issue. We incorporate the examiner's position as our own and add the following for emphasis only.

Appellants argue that claim 1 and claim 2 each require a bias heater power supply and a vaporization heater power supply that is separate from the bias heater power supply. Appellants argue that one skilled in the art would not have been motivated to modify Spahn's arrangement to include a vaporization heater power supply that is separate from the bias heater power supply. We disagree for the following reasons.

Figure 6 of Spahn depicts the thermal physical deposition source utilized in Spahn. As pointed out by the examiner, Spahn at col. 7, beginning at line 65 through col. 8, line 14, teaches how the top plate 20 provides for heating of the solid organic electroluminescent material to control its vaporization, and how a reduced degree of heating of the housing 10 provides for a bias-level heating to enhance slow outgassing of gases entrapped in the solid organic electroluminescent material.

Appellants argue that Spahn's vaporization/bias heating arrangement is specifically adapted to function with a single power source with a fixed relative heat setting. Brief, page 6. Appellants argue that Spahn has no need for independently controlling the vaporization heating arrangement since the

temperature of its bias-level heating arrangement is preset.
Brief, pages 7-8.

The examiner relies upon Soden for teaching the use of two separate power supplies. As shown by Soden, Figure 5 shows one embodiment very similar to that disclosed in Spahn. Figure 5 shows items 47 and 51 being in intimate contact with each other just as top plate 20 of Spahn can be in intimate contact with electrical flanges 11 and 13, as shown in Figure 6 of Spahn.

In the embodiment of Figure 5 of Soden, Soden teaches that a single heating source can be employed. See col. 21, line 66 through col. 22, line 41. In the very same column, Soden teaches an alternative embodiment that can be employed, shown in Figure 7. Figure 7 shows that surface 47 and crucible 51 can each be coupled to independent heat sources thereby enabling independent control of the temperature. Soden teaches that this embodiment has advantages that include reduced evaporation times and lowered temperature requirements for the heating of the selenium within the crucible.

Also, as pointed out by the examiner on page 8 of the answer, Soden discusses a problem associated with utilizing a single source heater which is that surface 47 may initially be at temperature significantly hotter than the body of the crucible 51 since the surface 47 is not in contact with material 60, and since contact with material 60 slows heating of crucible 51. See col. 22, lines 23 through 29 of Soden. The examiner then goes on to say that in Soden's second embodiment, wherein independent heater controls are utilized to heat the crucible 51 and surface 47, such excess temperature at surface 47 is avoided.

Soden also states that, as mentioned above, advantages of the second embodiment include lowered temperature requirements for heating of the material in the crucible.

The teachings of Soden that two separate power supply sources are an alternative to one single power supply are sufficient to support a prima facie case of obviousness. Appellants' argument that Spahn's configuration is adapted for only a single power supply is not convincing because one skilled in the art, in view of the teachings of Soden as discussed above, would have found it obvious to have modified Spahn's configuration accordingly when using two separate power supplies because Soden teaches how to accomplish this. Furthermore, the reasons discussed in Soden for selecting the embodiment that includes 2 separate power supply sources even further buttress the examiner's prima facie case.

We need not address appellants' and the examiner's comments with regard to Spahn's Figure 9 in making the determinations discussed above. It is sufficient that Soden clearly sets forth alternative embodiments, the first embodiment similar to the embodiment shown in Figure 6 of Spahn and the second embodiment wherein a vaporization heating power supply is separate from a bias heater power supply. We find no persuasive argument made by appellants to convince us that a modification to the configuration of Spahn to include two separate power supplies would not have been obvious.

In view of the above, we affirm each of the art rejections.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Romulo H. Delmendo

ROMULO H. DELMENDO)
Administrative Patent Judge)
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Jeffrey T. Smith

JEFFREY T. SMITH) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
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